

**ASH GROVE CEMENT COMPANY  
WESTERN REGION  
INTER-OFFICE MEMORANDUM**

**DATE:** NOVEMBER 4, 1992

**TO:** GEORGE WELLS

**FROM:** STEVE SHERIDAN

**COPIES:** WALTER GREER & ERIC HANSEN W/ATTACHMENTS  
JIM POST, HANS STEUCH, KEN RONE, NATE FERNOW W/O ATTACHMENTS

**SUBJECT:** SEATTLE SULFUR EMISSIONS PROBLEM

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*Attached is a memo from Nate Fernow with regard to sulfur emissions at the Seattle plant. Our present limit under our PSAPCA permit is 40#/hour of SO<sub>2</sub> or proof that our kiln system is 90% efficient in the recovery of the sulfur input. Attached to Nate's report are numerous graphs supporting the fact that we fail to meet either one of these criteria. We are well over 40#/hour even with the roller mill on. Sulfur emissions with the mill running are 2-5 times our permit level and 4-9 times the permit level when the mill is off. However, we are close to 90% efficiency, i.e., sulfur recovery when the roller mill is on, but only approximately 45% efficient when the roller mill is down.*

*According to Nate, the time has come for us to notify PSAPCA that we have started up, which begins a 180-day clock for having the stack tested for compliance with the emission limits. Nate and Hans both feel that PSAPCA will be reasonable with Ash Grove if we continue to show progress and cooperate closely with them. Neither feels we have a realistic chance of increasing the limit above 40#/hour. We will probably have to either add a scrubber or inject lime somewhere into the system. Perhaps Walter Greer or Eric Hansen could be of some help. By copying Walter and Eric with this memo, perhaps they could take a few minutes to review it and provide us with their comments.*

*While at BoxCrow with Walter and Eric, I invited them to come up to see Seattle. This would add good purpose to their visit.*



SES/ejj

**ASH GROVE CEMENT COMPANY**

WESTERN  
INTER-OFFICE  
PORTLAND

Post-It™ brand fax transmittal memo 7671		# of pages > 9
To <i>Ken RONE</i>	From <i>Nate</i>	
Co. <i>SEATTLE</i>	Co. <i>PORTLAND</i>	
Dept.	Phone #	
Fax #	Fax #	

Date: November 2, 1992

To: Steve Sheridan

From: Nate Fernow *Nate*

Subject: Seattle Sulfur Emissions

Copies: Ken Rone, Hans Steuch, Jim Post, Bill Siemering *H*

*This is still Not Final But I  
Had to Give A Copy to SES Before  
I Went to Mt City.*

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The attached graphs are a condensation of the Sulfur emission data from the Seattle plant from October 13 through October 21. The data includes all levels of operation including kiln starts and mill on and mill off conditions.

The data has been reduced to Sulfur rather than the various oxides of Sulfur that are used in analysis or gas emission limits. Elemental Sulfur is a common unit that can be converted back to the oxides using the following relationships:

$$\text{Sulfur} \times 2 = \text{SO}_2$$

$$\text{Sulfur} \times 2.5 = \text{SO}_3$$

The Sulfur emissions when the mill was running ranged from 2 to 5 times the (40 lb/hr SO<sub>2</sub>) limit set in our permit. We ranged from 4 to 9 times the limit when the mill was off.

PSAPCA must be notified fairly soon that the plant has "started". We would have a hard time pleading that we are not able to run at our discretion. We should have a plan for future control of the excess Sulfur emissions ready to present to them. I think they will be very accommodating, by letting us run, if they see we have a strategy for attacking the problem.

Notification of "start up" begins a 180 day clock for having the stack tested for compliance with the emission limits of the permits. There should be no difficulty in arranging the compliance tests within that window.

#### Options:

The limits set in PSAPCA's regulations allow 40 pounds per hour of SO<sub>2</sub> or proof that the system is 90% effective for recovery of the Sulfur input. We currently fail both of these criteria and cannot successfully argue that no controls are available for cement plants.

**Seattle Sulfur Emissions, NAF**

November 2, 1992

The data collected indicates that if we could limit the Sulfur to around 0.15% to 0.10% Sulfur as  $\text{SO}_3$  in the kiln feed<sup>1</sup> we should be able to meet our emission limits when the mill is running. (The percent of pyrite being relatively constant.) This will help when the mill is down but the emissions will still be 3 to 4 times our limit.

Cooling the exhaust gas with water will eliminate the condensible plume but I feel the system will not be effective enough to control the excess gaseous  $\text{SO}_2$ . An active system will be need to be used even if only when the raw mill is down.

**Actions:**

We should collect some data with a lower Sulfur kiln feed at the Seattle Plant. This means we need to have a quantity of limestone that has a Sulfur content below 0.10% as  $\text{SO}_3$ .

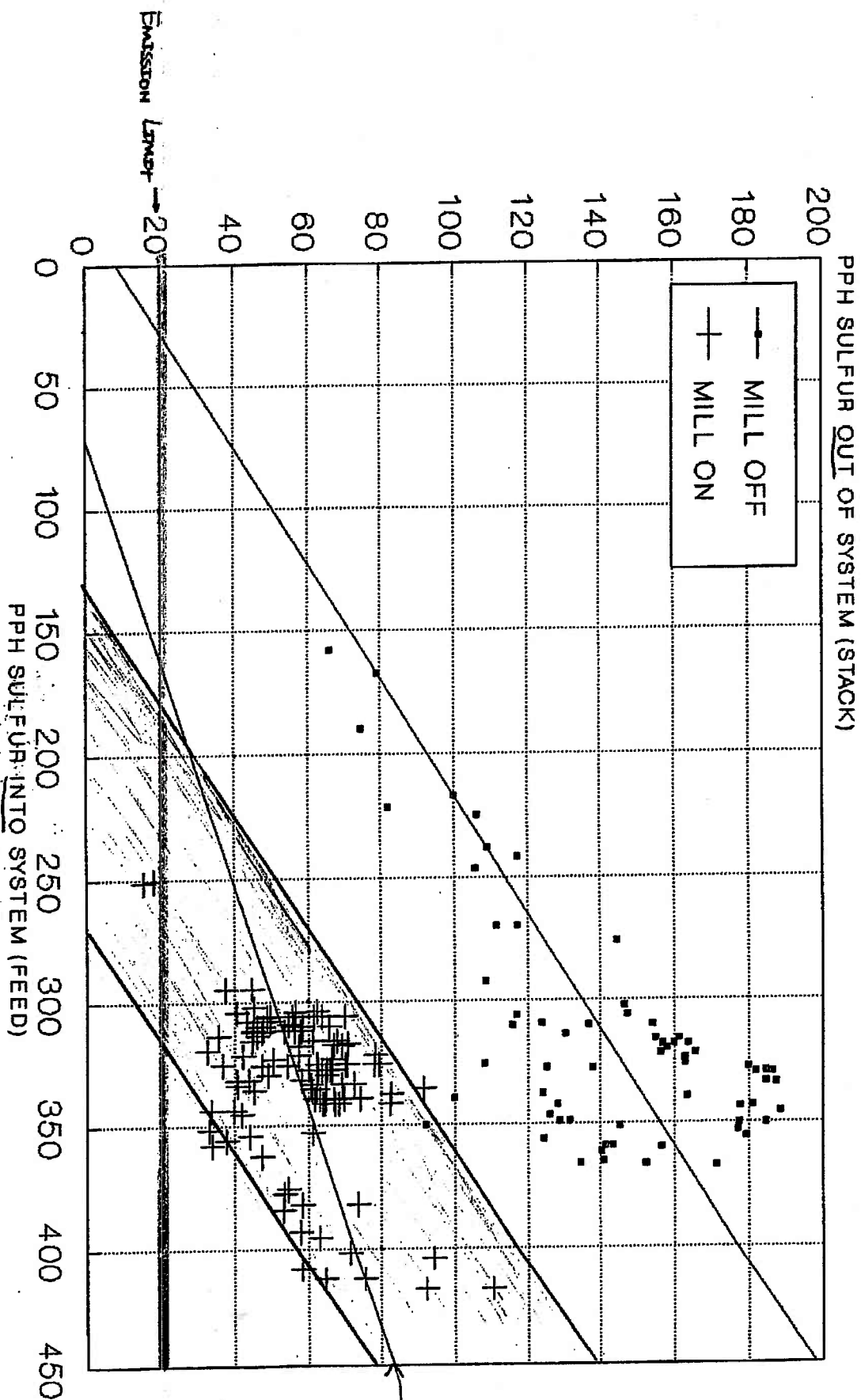
Preparations for an extended run of hydrated lime should be made. This perhaps should include cost estimates for a permanent system since lower Sulfur limestone will be a high waste material at the Blubber Bay Quarry.

Look into revision of our PSAPCA permit to be in compliance with the section where we recover 90% of the Sulfur.

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<sup>1</sup> This would mean 0.10% to 0.08% total Sulfur as  $\text{SO}_3$  in the limestone.

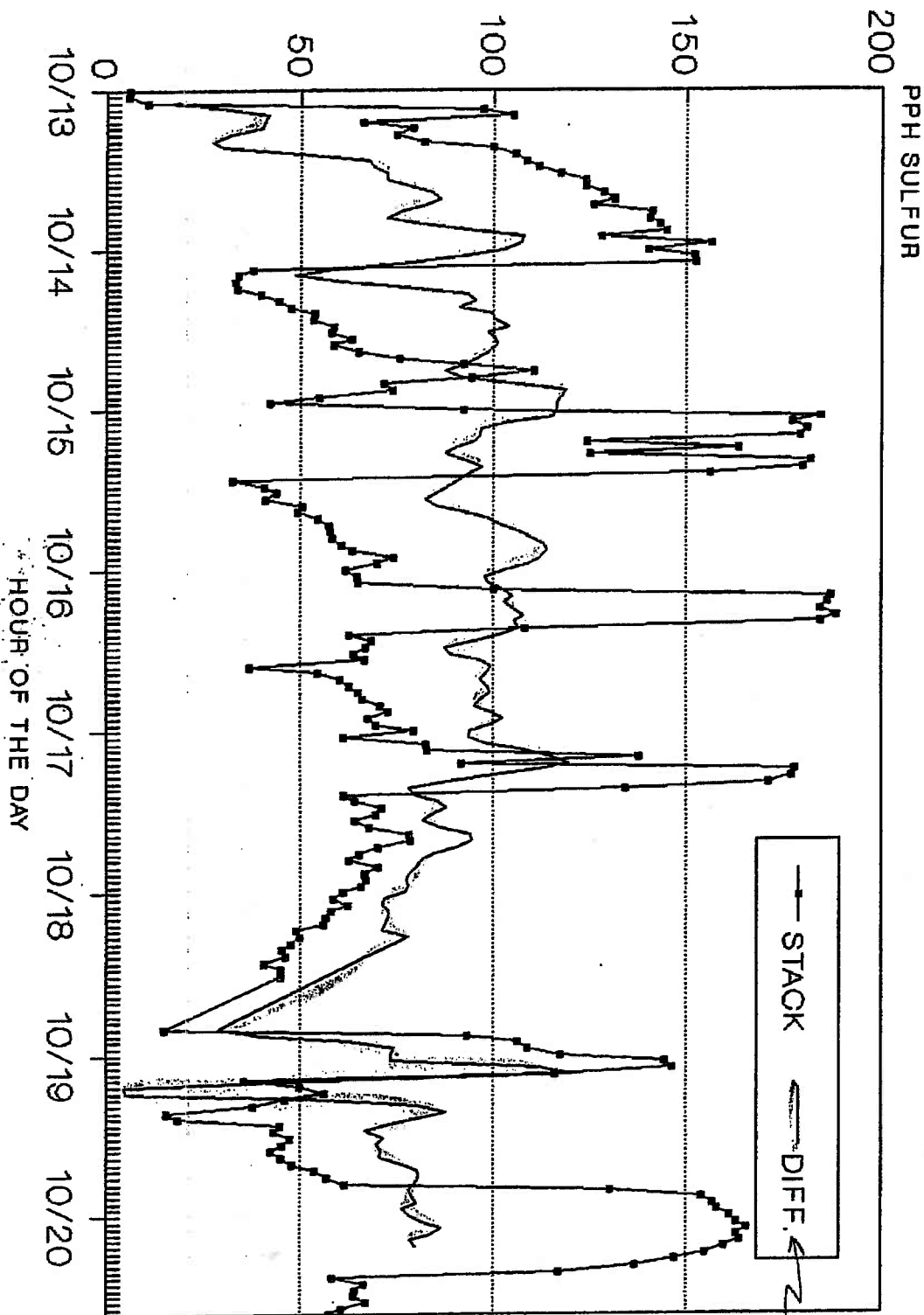
# SEATTLE PLANT



160 lb/hr S = ~0.12% SO<sub>2</sub> in Kiln Feed @ 170 TPH KF  
 225 lb/hr S = ~0.17% SO<sub>2</sub> in Kiln Feed @ 170 TPH KF

Runn Dm: 10-13 to 10-21-92

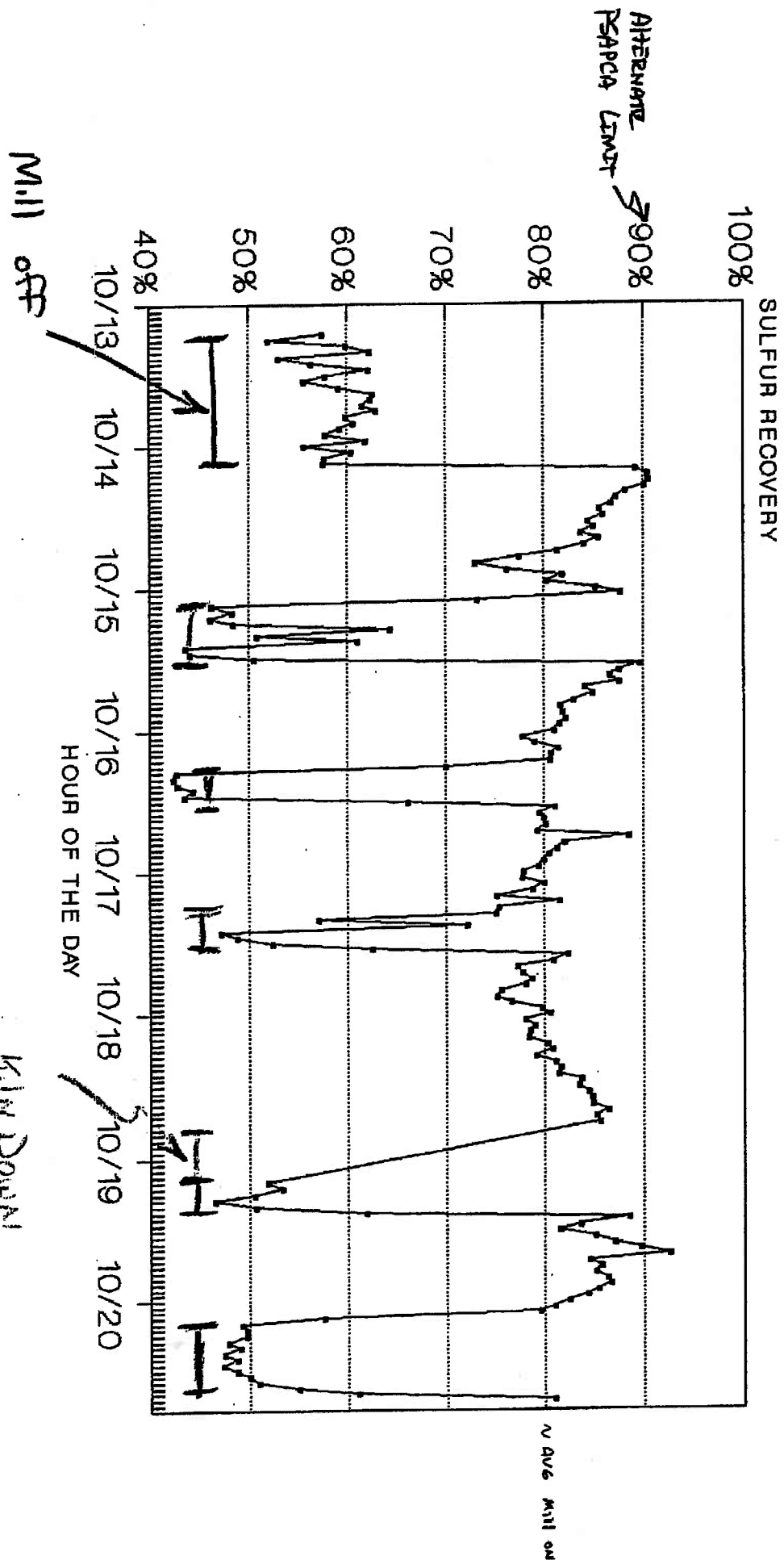
# SEATTLE PLANT SULFUR INFORMATION



MASS BALANCE  
Feed - CEMENT

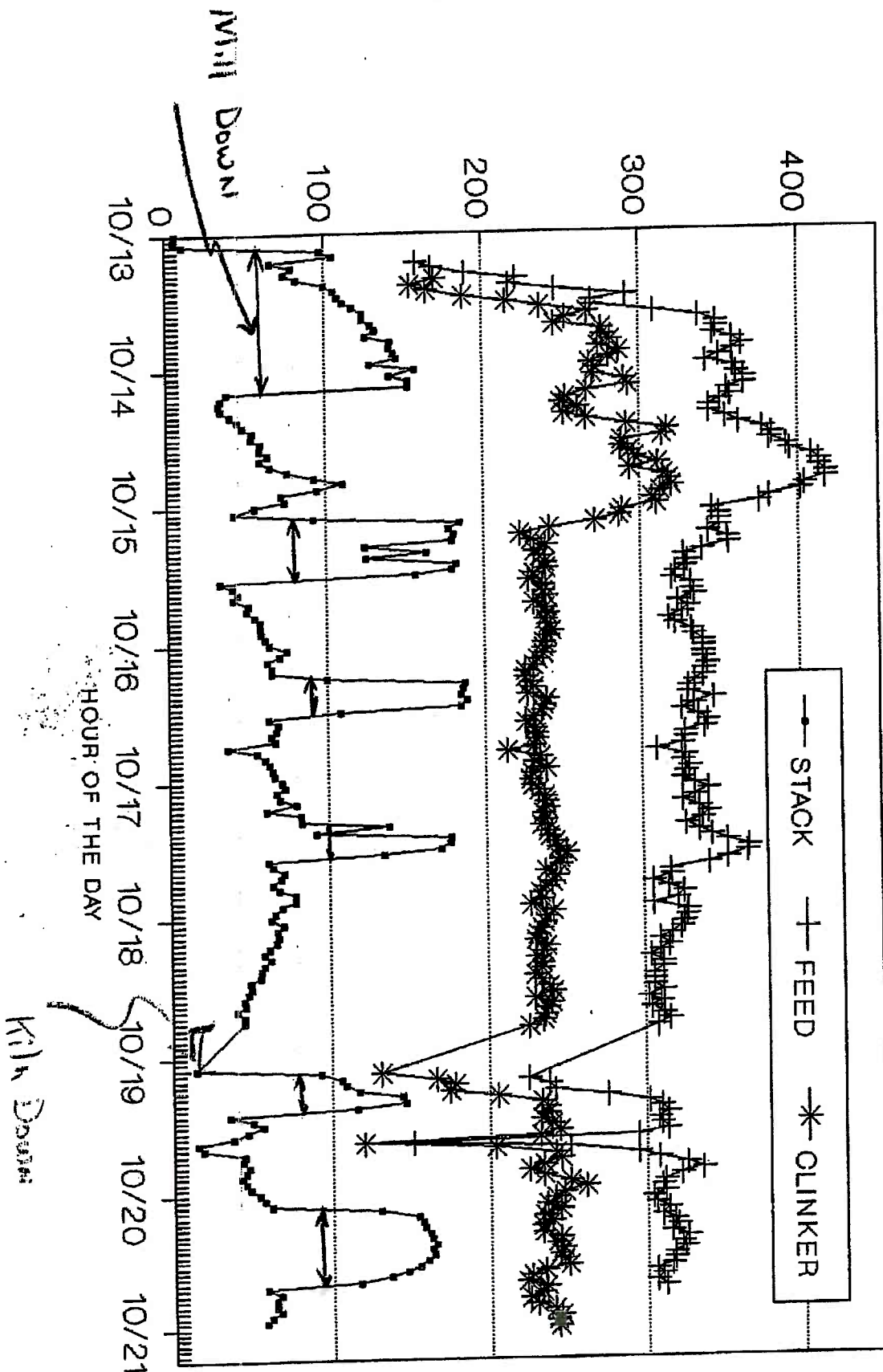
# SEATTLE PLANT

## SULFUR EMISSION INFORMATION

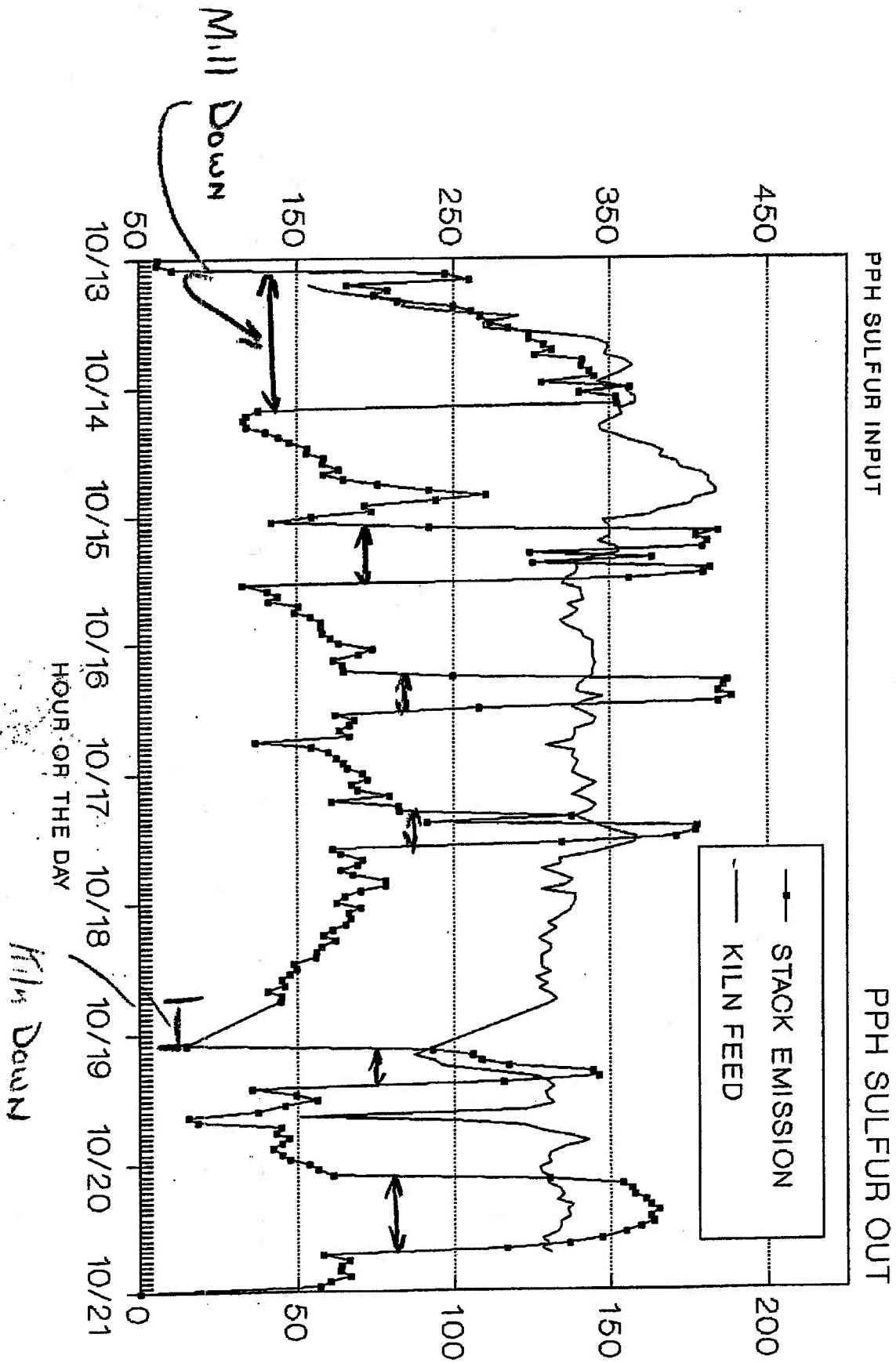


# SEATTLE PLANT SULFUR INFORMATION

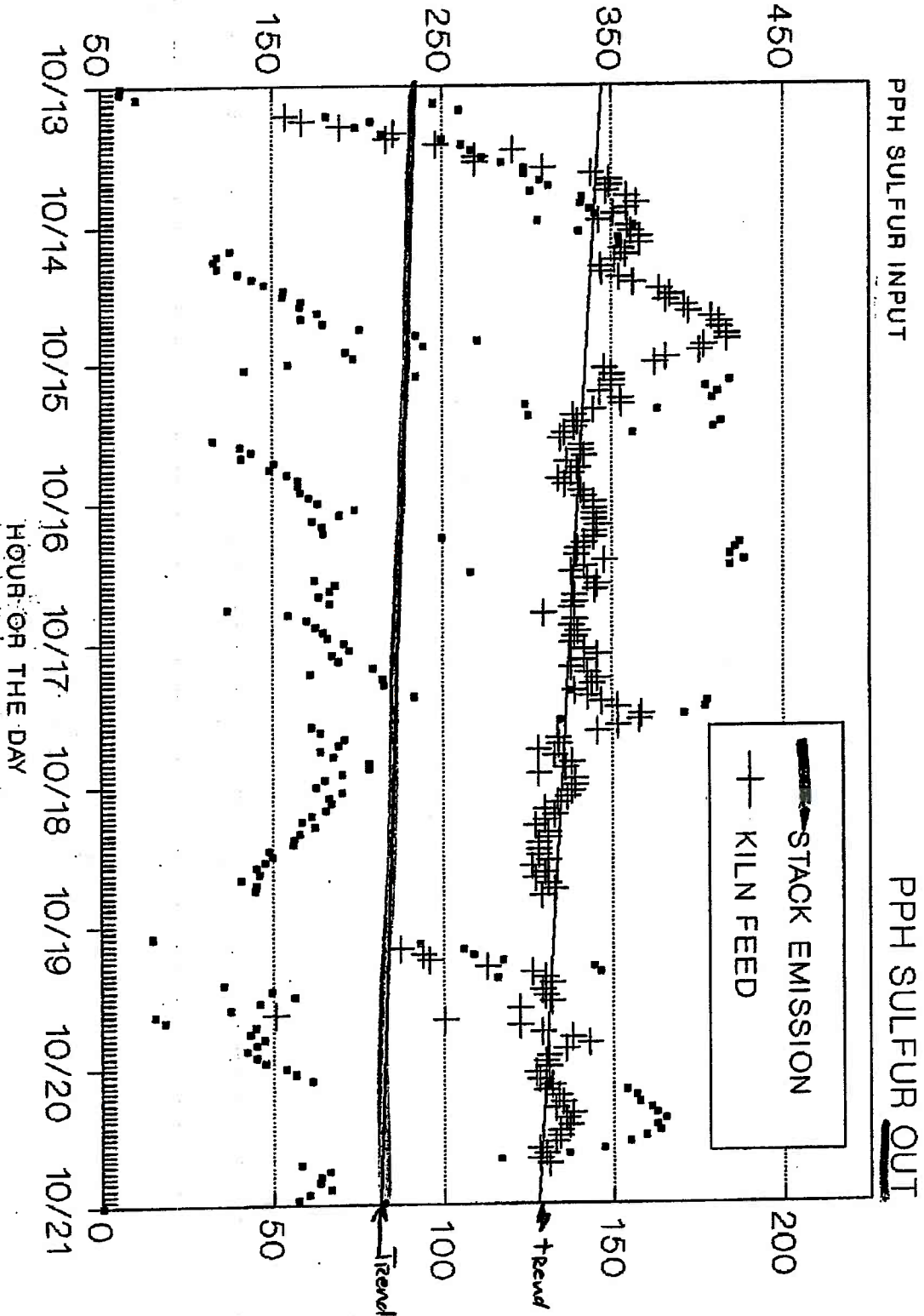
PPH SULFUR



# SEATTLE PLANT



# SEATTLE PLANT



# SEATTLE PLANT

## SULFUR INFORMATION

